UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,364	08/20/2001	Paul H. Gailus	CM04766H	7135

22917 7590 01/02/2008
MOTOROLA, INC.
1303 EAST ALGONQUIN ROAD
IL01/3RD
SCHAUMBURG, IL 60196

EXAMINER	
HASHEM, LISA	

ART UNIT	PAPER NUMBER
2614	

NOTIFICATION DATE	DELIVERY MODE
01/02/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing.Schaumburg@motorola.com
APT099@motorola.com

Office Action Summary	Application No. 09/933,364	Applicant(s) GAILUS ET AL.	
	Examiner Lisa Hashem	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 09 October 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,2,4-9,11-18,20 and 22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1, 2, 4-9, 11, 13-18, 20, and 22 is/are rejected.

7)☐ Claim(s) 12 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL DETAILED ACTION

Response to Amendment

1. The affidavit filed on 10-9-2007 under 37 CFR 1.131 has been considered but is ineffective to overcome the Chandler reference.

2. The evidence submitted is insufficient to establish a conception of the invention prior to the effective date of the Chandler reference. While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete disclosure to another. Conception is more than a vague idea of how to solve a problem. The requisite means themselves and their interaction must also be comprehended. See *Mergenthaler v. Scudder*, 1897 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897).

The written disclosure (ID No. 4766 H) submitted as evidence fails to disclose conception relating to the invention in claims 8, 11, and 14 wherein the disclosure does not disclose conception relating to: the adjustable pole element is a circuit comprising a plurality of elements having impedance that can be selectively coupled to the other elements of the circuit (as in claim 8), the at least one adjustable pole element comprises two adjustable pole elements (as in claim 11), and the step of moving a pole is accomplished by switching among a plurality of elements having different impedances (as in claim 14).

3. The evidence submitted is insufficient to establish diligence from a date prior to the date of reduction to practice of the Chandler reference to either a constructive reduction to practice or an actual reduction to practice. The written disclosure does not disclose diligence of the invention in claims 1, 2, 4-9, 11-18, 20, and 22. The written disclosure does not disclose 'how'

Response to Arguments

4. Applicant's arguments filed 10-9-07 have been fully considered but they are not persuasive.

5. Applicant argues that the combination of Horowitz in view of Kenington fail to disclose '...at least one adjustable zero element and at least one adjustable pole element are operable to change the bandwidth of the feedback loop...' as recited in claims 1 and 20. Examiner disagrees. Horowitz discloses in a training mode, operating conditions such as: temperature and frequency are varied (col. 2, lines 11-12). Further, the closed loop gain (wherein closed loop gain is defined as a gain response of a closed loop frequency response) is adjusted or changed or varied during amplitude training according to prestored operating condition adjustment factors in a look-up table with varying RF frequencies (col. 5, lines 47-52; col. 6, lines 5-56). The zeros, poles, and gain in the AGC block or circuitry of the radio transmitter depend on the location of the attenuators (Fig. 2; elements 33 and 34) in the forward path. The attenuators are changed by activating the AGC circuitry and this loop gain adjustment provides loop stability for the transmitter. The AGC circuitry change the loop bandwidth of the Cartesian feedback loop which reads on '...at least one adjustable zero element and at least one adjustable pole element are operable to change the bandwidth of the feedback loop...' in order to provide a loop bandwidth large enough for transmission but small enough to attenuate noise while maintaining stability and providing a large maximum loop gain (col. 6, line 57 – col. 8, line 7).

Kenington provides evidence that including the complex effects of poles and zeros or adjustable poles and zeros in a Cartesian loop transmitter can predict the frequency and magnitude of a peak that is based on a large maximum loop gain (page 474, section IV).

Applicant argues that Horowitz in view of Kenington do not disclose and '...moving a pole in the loop frequency response using the at least one adjustable pole element yielding a change in the closed loop frequency response...' as recited in claims 13 and 22. Examiner disagrees. Horowitz discloses in a training mode, operating conditions such as: temperature and frequency are varied (col. 2, lines 11-12). Further, the closed loop gain (wherein closed loop gain is defined as a gain response of a closed loop frequency response) is adjusted or changed or varied during amplitude training according to prestored operating condition adjustment factors in a look-up table with varying RF frequencies (col. 5, lines 47-52; col. 6, lines 5-56). The zeros, poles, and gain in the AGC block or circuitry of the radio transmitter depend on the location of the attenuators (Fig. 2; elements 33 and 34) in the forward path. The attenuators are changed by activating the AGC circuitry and this loop gain adjustment provides loop stability for the transmitter. The AGC circuitry (including poles) changes the closed loop frequency response bandwidth of the Cartesian feedback loop which reads on '...moving a pole in the loop frequency response using the at least one adjustable pole element yielding a change in the closed loop frequency response...' in order to provide an adjustable closed loop frequency response bandwidth to enhance a feedback loop and adjust the stability characteristics of the feedback loop to provide a maximum closed loop gain (col. 6, line 57 – col. 8, line 7).

Kenington provides evidence that including the complex effects of poles and zeros or adjustable poles and zeros in a Cartesian loop transmitter can predict the frequency and magnitude of a peak that is based on a large maximum loop gain (page 474, section IV).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 2, 4-9, 11, 13-18, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,722,056 by Horowitz et al, hereinafter Horowitz (Figs. 4-7 are omitted from the patent) in view of 'Noise Performance of a Cartesian Loop Transmitter', by Kenington et al, hereinafter Kenington (submitted in IDS by Applicant on 8-20-2001).

Regarding claim 1, Horowitz discloses in an electrical device (Fig. 2) generating a variable output signal, a feedback loop for adjusting the variable output signal (Fig. 2), the feedback loop having an input (Fig. 2: 10-14) for receiving an input signal, an output (Fig. 1, 50) for outputting the variable output signal and a loop bandwidth associated with a forward path and a feedback path of the feedback loop (col. 1, lines 5-53; col. 2, lines 11-12; col. 3, lines 24-43), the feedback loop comprising:

a power amplifier (Fig. 2, 36) coupled to the output of the feedback loop in the forward path of the feedback loop;

at least one adjustable zero element (Fig. 1, 26) coupled between the input of the feedback loop and the power amplifier;

at least one adjustable pole element (Fig. 1, 26) coupled between the input of the feedback loop and the power amplifier, wherein the at least one adjustable zero element and at least one

adjustable pole element are inherently operable to change the loop bandwidth of the feedback loop (col. 5, lines 47-52; col. 6, line 5 – col. 8, line 7).

The zeros, poles, and gain in the AGC block or circuitry of the radio transmitter depend on the location of the attenuators (Fig. 2; elements 33 and 34) in the forward path. The attenuators are changed by activating the AGC circuitry and this loop gain adjustment provides loop stability for the transmitter. The AGC circuitry change the loop bandwidth of the Cartesian feedback loop which reads on '...at least one adjustable zero element and at least one adjustable pole element are operable to change the bandwidth of the feedback loop...' in order to provide a loop bandwidth large enough for transmission but small enough to attenuate noise while maintaining stability and providing a large maximum loop gain that is constant and consistent (col. 6, line 57 – col. 8, line 7).

Horowitz briefly discloses the mention of the AGC circuitry including zeros and poles that is operable to change the loop bandwidth of the feedback.

Kenington discloses a Cartesian feedback loop (Fig. 1) and further discloses at least one adjustable zero element coupled and

at least one adjustable pole element around the feedback loop, wherein the at least one adjustable zero element and at least one adjustable pole element are operable to change the loop bandwidth of the feedback loop (see Table 1; Fig. 11; page 467-468, section II; page 474, section IV -> '...A more accurate model would need to include the complex effects of the poles and zeros around the loop, particularly those provided by the limited gain-bandwidth product of the operational amplifiers and those of the baseband sections of the up and downconverter elements, if appropriate...'.).

Kenington provides evidence that including the complex effects of poles and zeros or adjustable poles and zeros in a Cartesian loop transmitter can predict the frequency and magnitude of a peak that is based on a large maximum loop gain (page 474, section IV).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the feedback loop of Horowitz to include information regarding the zeros and poles operable to change the loop bandwidth of the feedback as taught by Kenington. One of ordinary skill in the art would have been lead to include more information on the zeros and poles located in the Cartesian feedback loop to indicate how the adjustments or changes of the zeros and poles effect the closed loop bandwidth and adjust the stability properties of the feedback loop and to provide a loop bandwidth large enough for transmission but small enough to attenuate noise while maintaining stability and providing a large maximum loop gain.

Regarding claim 2, the feedback loop of claim 1, wherein Horowitz further discloses the at least one adjustable zero element (Fig. 2, 26) (col. 6, line 57 – col. 8, line 7).

Regarding claim 4, the feedback loop of claim 1, wherein Horowitz further discloses the at least one adjustable pole element is in the forward path of the feedback loop (Fig. 2, 26) (col. 6, line 57 – col. 8, line 7).

Regarding claim 5, the feedback loop of claim 4, wherein Horowitz further discloses the at least one adjustable zero element is in the forward path of the feedback loop, the feedback loop further comprising: a mixer (Fig. 2, 61) in the forward path of the feedback loop coupled between the input of the feedback loop and the power amplifier;
and a mixer (Fig. 2, 62) in the feedback path of the feedback loop coupled between the output of the feedback loop and the input of the feedback loop (col. 3, lines 24-43).

Regarding claim 6, the feedback loop of claim 5, wherein Horowitz further discloses the feedback loop is used as part of a radio transmitter (see Abstract; col. 1, lines 5-16).

Regarding claim 7, the feedback loop of claim 1, wherein Horowitz further discloses the feedback loop is a cartesian feedback loop (see Abstract; col. 1, lines 5-16; col. 3, lines 24-43).

Regarding claim 8, the feedback loop of claim 1, wherein Horowitz further discloses the adjustable pole element is a circuit comprising a plurality of elements having impedance that can be selectively coupled to other elements of the circuit (Fig. 2, 26; col. 6, line 57 – col. 8, line 7).

Regarding claim 9, the feedback loop of claim 1, wherein Horowitz further discloses the at least one adjustable pole element and the at least one adjustable zero element are substantially contained within an integrated circuit (Fig. 2, 26; col. 6, line 57 – col. 8, line 7).

Regarding claim 11, the feedback loop of claim 1, wherein Horowitz further discloses the at least one adjustable pole element comprises two adjustable pole elements (Fig. 2, 26; col. 6, line 57 – col. 8, line 7).

Regarding claim 13, Horowitz discloses in a feedback loop (i.e. Cartesian feedback loop) comprising an input (Fig. 2: 10-14) for receiving an input signal, an output (Fig. 1, 50) for outputting a variable output signal, a power amplifier (Fig. 2, 36) coupled to the output of the feedback loop in a forward path of the feedback loop, at least one adjustable zero element (Fig. 1, 26) coupled between the input of the feedback loop and the power amplifier in the forward path of the feedback loop, and at least one adjustable pole element (Fig. 1, 26) coupled between the input of the feedback loop and the power amplifier in the forward path of the feedback loop (col. 1, lines 5-53; col. 2, lines 11-12; col. 3, lines 24-43), a method comprising the steps of:

generating, in the feedback loop, a loop frequency response having at least one pole and at least one zero, and a closed loop frequency response (wherein closed loop gain is defined as a gain response of a closed loop frequency response) being characterized by a closed loop bandwidth; and

moving a pole in the loop frequency response using the at least one adjustable pole element inherently yielding a change in the closed loop frequency response (col. 5, lines 47-52; col. 6, line 5 – col. 8, line 7).

The zeros, poles, and gain in the AGC block or circuitry of the radio transmitter depend on the location of the attenuators (Fig. 2; elements 33 and 34) in the forward path. The attenuators are changed by activating the AGC circuitry and this loop gain adjustment provides loop stability for the transmitter. The AGC circuitry (including poles) changes the closed loop frequency response bandwidth of the Cartesian feedback loop which reads on '...moving a pole in the loop frequency response using the at least one adjustable pole element yielding a change in the closed loop frequency response...' in order to provide an adjustable closed loop frequency response bandwidth to enhance a feedback loop and adjust the stability characteristics of the feedback loop to provide a loop gain that is constant and consistent (col. 6, line 57 – col. 8, line 7).

Horowitz briefly discloses the mention of the AGC circuitry including zeros and poles that is operable to change the closed loop frequency response by changing the closed loop gain.

Kenington discloses a Cartesian feedback loop (Fig. 1) and further discloses at least one adjustable zero element coupled and

at least one adjustable pole element around the feedback loop, wherein moving a pole in the loop frequency response using the at least one adjustable pole element yielding a change in the closed loop frequency response (see Table 1; Fig. 11; page 467-468, section II; page 474, section IV -> '...A more accurate model would need to include the complex effects of the poles and zeros around the loop, particularly those provided by the limited gain-bandwidth product of the operational amplifiers and those of the baseband sections of the up and downconverter elements, if appropriate...'.).

Kenington provides evidence that including the complex effects of poles and zeros or adjustable poles and zeros in a Cartesian loop transmitter can predict the frequency and magnitude of a peak that is based on a large maximum loop gain (page 474, section IV).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the feedback loop of Horowitz to include information regarding moving a pole in the loop frequency response using the at least one adjustable pole element yielding a change in the closed loop frequency response as taught by Kenington. One of ordinary skill in the art would have been lead to include more information on the poles located in the Cartesian feedback loop to indicate how the adjustments or changes of the poles effect the closed loop bandwidth and adjust the stability properties of the feedback loop and to provide an adjustable closed loop frequency response bandwidth to enhance a feedback loop and adjust the stability characteristics of the feedback loop.

Regarding claims 14 and 17, please see claims 1 and 6, respectively.

Regarding claim 16, the method of claim 15, wherein Horowitz further disclose the step of moving a zero is accomplished by adjusting an amplifier with an adjustable gain (col. 3, lines 24-43; col. 3, line 59 – col. 4, line 6; col. 4, lines 13-26; col. 7, lines 11-19).

Regarding claim 18, Horowitz further discloses an integrated circuit comprising the feedback loop of claim 1 (Fig. 2; col. 3, lines 24-43).

Regarding claim 20, please see the rejections to claims 1 and 5 above.

Regarding claim 22, please see the rejection to claim 1 above.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 2, 4-9, 11, 13-18, 20, and 22 are rejected under 35 U.S.C. 102(e) as being U.S. Pat. No. 6,859,097 by Chandler.

(Note: Chandler is considered prior art based on the date of filing of the PCT (May 14, 2001) based on being filed after November 29, 2000, designating the US, and being published in English by WIPO; See MPEP 701 below: In order to rely on an international filing date for prior art purposes under 35 U.S.C. 102(e), the international application must have been filed on or after November 20, 2000, it must have been designated the U.S., and the international publication under PCT Article 21(2) by WIPO must have been in English. If any one of the

conditions is not met, the international filing date is not a U.S. filing date for prior art purposes under 35 U.S.C. 102(e)).

Regarding claim 1, Chandler discloses in an electrical device (Fig. 13) generating a variable output signal (Y(s)), a feedback loop for adjusting the variable output signal (H(s)), the feedback loop having an input (X(s)) for receiving an input signal, an output (Y(s)) for outputting the variable output signal and a loop bandwidth associated with a forward path and a feedback path of the feedback loop (col. 1, lines 59-67), the feedback loop comprising:

a power amplifier ($A_2(s)$) coupled to the output of the feedback loop in the forward path of the feedback loop;

at least one adjustable zero element (H_2^{-1}) coupled between the input of the feedback loop and the power amplifier;

at least one adjustable pole element (H_1, H_2) coupled between the input of the feedback loop and the power amplifier, wherein the at least one adjustable zero element and at least one adjustable pole element are operable to change the loop bandwidth of the feedback loop (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 2, the feedback loop of claim 1, wherein Chandler further discloses the at least one adjustable zero element (H_2^{-1}) (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 4, the feedback loop of claim 1, wherein Chandler further discloses the at least one adjustable pole element (H_1, H_2) is in the forward path of the feedback loop (H_2^{-1}) (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 5, the feedback loop of claim 4, wherein Chandler further discloses the at least one adjustable zero element is in the forward path of the feedback loop, the feedback loop further comprising: a mixer (between the resonator and the power amplifier) in the forward path of the feedback loop coupled between the input of the feedback loop and the power amplifier; and a mixer (between X(s) and F(s)) in the feedback path of the feedback loop coupled between the output of the feedback loop and the input of the feedback loop (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 6, the feedback loop of claim 5, wherein Chandler further discloses the feedback loop is used as part of a radio transmitter (col. 1, lines 4-18).

Regarding claim 7, the feedback loop of claim 1, wherein Chandler further discloses the feedback loop is a cartesian feedback loop (col. 2, lines 1-12; Fig. 13).

Regarding claim 8, the feedback loop of claim 1, wherein Chandler further discloses the adjustable pole element is a circuit comprising a plurality of elements having impedance that can be selectively coupled to other elements of the circuit (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 9, the feedback loop of claim 1, wherein Chandler further discloses the at least one adjustable pole element and the at least one adjustable zero element are substantially contained within an integrated circuit (Fig. 13; col. 7, lines 32-54).

Regarding claim 11, the feedback loop of claim 1, wherein Chandler further discloses the at least one adjustable pole element comprises two adjustable pole elements ((H_1, H_2); col. 7, lines 32-54).

Regarding claim 13, Chandler discloses in a feedback loop (Fig. 13) comprising an

input (X(s)) for receiving an input signal, an output (Y(s)) for outputting a variable output signal, a power amplifier ($A_2(s)$) coupled to the output of the feedback loop in a forward path of the feedback loop, at least one adjustable zero element (H_2^{-1}) coupled between the input of the feedback loop and the power amplifier in the forward path of the feedback loop (H(s)) (col. 1, lines 59-67), and at least one adjustable pole element (H_1, H_2) coupled between the input of the feedback loop and the power amplifier in the forward path of the feedback loop (H(s)) (col. 1, lines 59-67), the feedback loop further having a loop and a closed loop frequency response associated with the forward path and a feedback path of the feedback loop, the loop frequency response having at least one pole and at least one zero and the closed loop frequency response being characterized by a closed loop bandwidth (col. 7, lines 32-54), a method comprising the steps of:

moving a pole in the loop frequency response using the at least one adjustable pole element yielding a change in the closed loop frequency response (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 14, the method of claim 13, wherein Chandler further disclose the step of moving a pole is accomplished by switching among a plurality of elements having different impedances (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 15, the method of claim 13, wherein Chandler further disclose the step of: moving a zero in the loop frequency response using the at least one adjustable zero element yielding a change in the closed loop frequency response (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 16, the method of claim 15, wherein Chandler further disclose the step of moving a zero is accomplished by adjusting an amplifier with an adjustable gain (col. 1, lines 41-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 17, the method of claim 13, wherein Chandler further discloses the power amplifier amplifies the input signal so that it can be transmitted over a radio channel (col. 1, lines 4-18 and lines 59-67; col. 7, lines 32-54).

Regarding claim 18, Chandler further discloses an integrated circuit implementing substantially all the components of a feedback loop with adjustable frequency response, the integrated circuit the feedback loop of claim 1 (Fig. 13; col. 7, lines 32-54).

Regarding claim 20, Chandler discloses in a feedback loop (Fig. 13) having an input (X(s)) for receiving an input signal, an output (Y(s)) for outputting a variable output signal and a loop bandwidth associated with a forward path and a feedback path of the feedback loop (col. 7, lines 32-54)), the feedback loop comprising:

a power amplifier ($A_2(s)$) coupled to the output of the feedback loop in a forward path of the feedback loop;

at least one adjustable zero element (H_2^{-1}) coupled between the input of the feedback loop and the power amplifier in the forward path of the feedback loop (H(s)) (col. 1, lines 59-67);

at least one adjustable pole element (H_1, H_2) coupled between the input of the feedback loop and the power amplifier in the forward path of the feedback loop (H(s)) (col. 1, lines 59-67);

a first mixer (between the resonator and the power amplifier) in the forward path of the feedback loop coupled between the input of the feedback loop and the power amplifier;

and a second mixer (between X(s) and F(s)) in the feedback path of the feedback loop coupled between the output of the feedback loop and the input of the feedback loop, wherein the at least one adjustable zero element and at least one adjustable pole element are operable to change the loop bandwidth of the feedback loop (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Regarding claim 22, Chandler discloses in a feedback loop (Fig. 13) comprising an input for receiving an input signal (X(s)), an output for outputting a variable output signal (Y(s)), a power amplifier coupled to the output of the feedback loop in a forward path of the feedback loop ($A_2(s)$), at least one adjustable zero element (H_2^{-1}) coupled between the input of the feedback loop and the power amplifier in the forward path of the feedback loop, and at least one adjustable pole element coupled between the input of the feedback loop and the power amplifier in the forward path of the feedback loop, and at least one adjustable pole element (H_1, H_2) coupled between the input of the feedback loop and the power amplifier in the forward path of the feedback loop (H(s)) (col. 1, lines 59-67), the feedback loop further having a loop and a closed loop frequency response associated with the forward path and a feedback path of the feedback loop, the loop frequency response having at least one pole and at least one zero and the closed loop frequency response being characterized by a closed loop bandwidth (col. 7, lines 32-54), a method comprising the steps of:

moving a pole in the loop frequency response using the at least one adjustable pole element yielding a change in the closed loop frequency response; and moving a zero in the loop frequency response using the at least one adjustable zero element yielding a change in the closed loop frequency response (col. 1, lines 59-67; col. 2, lines 13-19; col. 7, lines 32-54).

Allowable Subject Matter

10. Claim 12 is objected to as being dependent upon a rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Horowitz in view of Kenington do not disclose the structure and locations of the elements as disclosed in claim 12.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see PTO-892 attached.

13. Any response to this action should be mailed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Or faxed to:

(571) 273-8300 (for formal communications intended for entry)

Or call:

(571) 272-2600 (for customer service assistance)

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Hashem whose telephone number is (571) 272-7542. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LH
lh
December 17, 2007

12/26/07
Primary Examiner
AU 2614